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## (54) PRODUCTION OF TITANIUM BASED CONDUCTIVE THIN FILM

## (57)Abstract:

**PROBLEM TO BE SOLVED:** To produce a high quality titanium based conductive thin film low in chlorine contamination by grounding one end of a plasma generating electrode arranged in a treating chamber through a condenser.

**SOLUTION:** One side introducing terminal 62 of the plasma generating electrode 61 having a shape like one-turning loop is connected to a high-frequency power source 52 and the other side introducing terminal 63 is grounded through the condenser 81. 20ml/min titanium tetrachloride, 30ml/min gaseous hydrogen and 10ml/min gaseous nitrogen are introduced into the treating chamber 20, and a pressure in the treating chamber 20 is set in about 1Pa and a temp. of a substrate 21 is set in 450-600° C. When a low pressure and high density plasma is generated by setting an output of the high-frequency power source 52 in 2.5kW, a titanium nitride film is deposited at a speed of about 30nm/min. Chlorine contamination of the obtained titanium nitride film is  $\leq 1\%$  and the film has a metallic brightness and a low resistance.

